



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/529,289	03/25/2005	Manabu Suhara	268120US0PCT	2037

22850 7590 12/22/2006
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

WILLIAMS, SHERMANDA L

ART UNIT	PAPER NUMBER
----------	--------------

1745

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/22/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/529,289

Applicant(s)

SUHARA ET AL.

Examiner

Shermanda L. Williams

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 2,6-15,17 and 19-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-5,16 and 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 3/25/2005, 6/22/2005.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I claims 1-5, 16-21 and species election of LiCoO_2 in the reply filed on 11/28/2005 is acknowledged. The traversal is on the ground(s) that no adequate reason has been provided to support distinctiveness between the groups and that no serious burden would be imposed in a search of all the claims has been considered. This is not found persuasive because Group I is drawn to a positive electrode material and Group II is drawn to a method of making a positive electrode material. This application contains two inventions or groups of inventions, which are not so linked as to form a single general inventive concept under PCT Rule 13.1. Neither Group I nor Group II posses a "special technical feature" that defines a contribution which each of the claimed inventions, considered as a whole, makes over the prior art. The positive electrode active material requires an average particle size of 5 to 15 micrometers, which is not required in the method of making the positive electrode. Furthermore, Group I (positive electrode active material) requires a different field of search than Group II (method of making the electrode) due to their different classification. Therefore the restriction for examination purposes as indicated is deemed proper.
2. Claims 6-15 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply

Art Unit: 1745

filed on 11/28/2006. The requirement is still deemed proper and is therefore made FINAL.

3. Claims 2, 17, 19, 20, 21 have not been examined. Claims 17, 19, 20, and 21 depend from the process claims drawn to the nonelected invention. Claim 2 does not read on the elected species, LiCoO_2 .

Priority

4. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

5. The information disclosure statements (IDS) submitted on 3/25/2005 and 6/22/2005 were considered by the examiner.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 3-5, 16, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moriuchi et al. (JP 2003-257416) in view of Matsubara (US 2001/0010807 A1). Moriuchi et al. discloses a positive electrode for a lithium secondary battery. The positive electrode material is a mixture of lithium cobalt composite oxide having a mean particle size of 7 to 13 micrometers and 1-6 micrometers respectively. The weight ratio of the particles is 1:0.2 to 1.5. (See Abstract) The mean particle size of the lithium

Art Unit: 1745

cobalt system (total mixture) is 5 to 13 micrometers, which is within the range claimed by the applicant (Paragraph 24). The particle distribution of size D10 is 2 to 6 micrometers, which is at least 50% of D50 (average particle size) (Paragraph 24). The particle distribution of size D90 is 15 to 25 micrometers, which is at least 150% of D50 (average particle size) (Paragraph 24). Moriuchi does not disclose the surface area and press density of the positive electrode active material.

8. Matsubara discloses a lithium nickel cobalt oxide as the active material of a positive electrode for a rechargeable battery. The electrode active material has a specific surface area of $0.1\sim 2\text{ m}^2/\text{g}$ and an average particle size of $5\sim 30$ micrometers (Paragraph 26). The particle sizes are such that 10% of the particle size distribution is $0.5D$ and 90% is $2D$ or lower (D is the average particle size) (Paragraph 17). The press density is about $2\sim 3\text{ g/cm}^3$ (Paragraph 56). Matsubara teaches that the press density of the active material is important in that it decreases the moving distance between the particles and accelerates the crystal growth of the material (Paragraph 57). Due to the use of the same material having similar material characteristics as those presented by the applicant, the half value width of the diffraction peak on (110) plane at $2\theta=66.5\pm 1^\circ$ from 0.07 to 0.14° is inherent. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the lithium cobalt oxide material of Moriuchi et al. to include a to have a surface area of ranging from 0.3 to $0.7\text{ m}^2/\text{g}$ and a press density 2.7 to 3.1 g/cm^3 such as taught by Matsubara in order to increase the density of the material to achieve higher capacity battery with an high charge/discharge rate.


Art Unit: 1745

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shermanda L. Williams whose telephone number is (571) 272-8915. The examiner can normally be reached on Mon.-Thurs. 7 AM - 4:30 PM and alternating Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


PATRICK JOSEPH RYAN
SUPERVISORY PATENT EXAMINER